



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/632,963	08/04/2003	Hyung-Sok Yeo	249/398	4479

27849 7590 04/12/2007  
LEE & MORSE, P.C.  
3141 FAIRVIEW PARK DRIVE  
SUITE 500  
FALLS CHURCH, VA 22042

EXAMINER
----------

BAXTER, ZOE E

ART UNIT	PAPER NUMBER
----------	--------------

3735

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/12/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

ed

<b>Office Action Summary</b>	<b>Application No.</b>		<b>Applicant(s)</b>	
	10/632,963		YEO ET AL.	
	<b>Examiner</b>		<b>Art Unit</b>	
	Zoe E. Baxter		3735	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on December 22, 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) 9-15 and 22-28 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8, 17-21 and 29-31 is/are rejected.
- 7) ☒ Claim(s) 16 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

Art Unit: 3735

## **DETAILED ACTION**

### ***Response to Amendment***

1. The examiner recognizes the amendments filed December 22, 2006. Claims 1-31 are currently pending in the application. Claims 9-15 and 22-28 are withdrawn from consideration. Claims 1, 4, 17 and 18 have been amended and claims 1-8, 16-21 and 29-31 have been presented for further consideration on the merits.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 5-8 and 19-21 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Regarding claims 5 and 19 it is unclear how the pressure application unit applies pressure to the body using a nut coupled with a bolt. As pictured in figure 2 when one turns the bolt the only thing that will happen is the bolt will move farther into the nut since there is no supporting member to hold either the nut or the bolt fixed.

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Art Unit: 3735

5. The term "vertical" in claims 1 and 17 is a relative term, which renders the claim indefinite. The term "vertical" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. The claim of the finger probe comprising a pressure application unit wherein the application unit is always on a vertical line passing through the light source and photodetector is not possible unless the finger probe is fixed in a single orientation. The pressure application unit can be stated as always applying pressure in the axis including the light source and detector. Since the unit is a finger probe it is possible that the finger probe be rotated 90° rendering the pressure unit to then be applying pressure in the horizontal direction. Without a fixed orientation of the probe relative to the ground vertical and horizontal directions are not acceptable definitions for the orientation of the pressure application unit.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1, 3-5, 17-19 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aronow et al. (US Patent No. 6253097 B1) further in view of Gavish (US Patent No. 4580574).

Art Unit: 3735

8. Referring to claims 1 and 3 Aronow et al. describes a probe for use in photoplethysmographic measurement (column 3 line 50) comprising a light source (column 2 lines 24-27), a photodetector (column 2 line 54), a body having a space for receiving the object (column 9 lines 26-30) in which the light source and photodetector are positioned in the same optical axis (figure 3) and a pressure application unit which is a spring in the probe which exerts a force to cause the two housings to be pressed against the appendage (column 9 lines 12-18). Aronow et al. states the electrical signals that are received by the monitor are produced by the light detector inherently includes a photoelectric converter. Aronow et al. fail to teach a probe for use in photoplethysmographic measurement wherein the pressure application unit is always on a vertical line passing through the light source and the photodetector. Gavish teaches a probe wherein the pressure application unit is in the same axis of the source and a detector (figure 1) such that the pressure application unit is perpendicular to the plane of the source and detector. Although the probe taught by Gavish is shown in figure 1 as having the pressure application unit on a horizontal axis the probe is not fixed in any orientation as well as the applicant's probe is not fixed in any orientation relative to the ground therefore it is possible that the probe be rotated 90° in which case the pressure application unit would be on a vertical axis. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Aronow et al. to include a pressure unit similar to that of Gavish in order to maintain an intimate contact between the sensor and the tissue (Gavish column 5 lines 21-25).

Art Unit: 3735

9. Referring to claim 4 Aronow et al. fail to teach a pressure application unit wherein the pressure application unit is aligned in the same optical axis above the light source. Gavish et al. teach a pressure application unit wherein the pressure application unit is aligned in the same optical axis as the source (figure 1) however the orientation of the device as shown in figure 1 fails to teach the unit above the source. Since the probe is not fixed in a given orientation in relation to the ground it is possible to rotate the unit such that the application unit is on top above the detector and the light source is on the bottom of the unit therefore the pressure application unit would be above the source unit. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Aronow et al. to include a pressure application unit similar to that of Gavish in order to provide a better contact between the tissue and the sensors (Gavish column 5 lines 21-25).

10. Referring to claim 5 Aronow et al. fail to teach a pressure application unit comprising a nut attached to an upper surface of the light source to be moveable in the vertical direction and a bolt coupled to the nut. Gavish teaches a pressure application unit using a screw (figure 1 reference 5) and threaded receiving portion (figure 1 reference 3) to apply pressure to maintain a constant tissue contact between the apparatus and the body tissue (column 5 lines 25-31). A screw coupled with a threaded portion of the device is functionally equivalent to a bolt coupled with a nut. Since the probe is not fixed relative to the ground simply by rotating the probe 90° the pressure application unit is then on the vertical. It would have been obvious to one of ordinary skill in the art at the time of the present inventor to modify the probe of Aronow et al. to

Art Unit: 3735

include a nut and bolt style pressure application unit similar to that of Gavish in order to provide a better contact between the tissue and sensor (Gavish column 5 lines 21-25).

Further more using a manually controlled method of tightening on to the body appendage there is less chance of a malfunction and an injury.

11. Referring to claims 17 and 29 Aronow et al. disclose a biological measuring system comprising a probe (column 6 line 36) and a monitor, which controls the operation of the probe (column 6 lines 64-66), processes the information (column 6 lines 57-59) and a display (column 6 line 59-column 7 line 3). As discussed above the probe comprises a light source (column 2 lines 24-27), a photodetector (column 2 line 54), a body having a space for receiving the object (column 9 lines 26-30) and a pressure application unit (column 9 lines 12-18). Aronow et al. disclose a photoplethysmographic (column 3 line 50) display unit (column 6 lines 59-61). Aronow et al. explain that the display is for production of a readable output and a waveform can be a human readable output. Aronow et al. fail to teach a pressure application unit wherein the pressure application unit is always on a vertical line passing through the light source and the photodetector. Gavish teaches a probe wherein the pressure application unit is in the same axis of the source and a detector (figure 1). Although the probe taught by Gavish is shown in figure 1 as having the pressure application unit on a horizontal axis the probe is not fixed in any orientation as well as the applicant's probe is not fixed in any orientation relative to the ground therefore it is possible that the probe be rotated 90° in which case the pressure application unit would be on a vertical axis. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the



Art Unit: 3735

invention of Aronow et al. to include a pressure unit similar to that of Gavish in order to maintain an intimate contact between the sensor and the tissue (Gavish column 5 lines 21-25).

12. Referring to claim 18 Aronow et al. fail to teach a pressure application unit wherein the pressure application unit is aligned in the same optical axis above the light source. Gavish et al. teach a pressure application unit wherein the pressure application unit is aligned in the same optical axis as the source (figure 1) however the orientation of the device as shown in figure 1 fails to teach the unit above the source. Since the probe is not fixed in a given orientation in relation to the ground it is possible to rotate the unit such that the application unit is on top above the detector and the light source is on the bottom of the unit therefore the pressure application unit would be above the source unit. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Aronow et al. to include a pressure application unit similar to that of Gavish in order to provide a better contact between the tissue and the sensors (Gavish column 5 lines 21-25).

13. Referring to claim 19 Aronow et al. fail to teach a pressure application unit comprising a nut attached to an upper surface of the light source to be moveable in the vertical direction and a bolt coupled to the nut. Gavish teaches a pressure application unit using a screw (figure 1 reference 5) and threaded receiving portion (figure 1 reference 3) to apply pressure to maintain a constant tissue contact between the apparatus and the body tissue (column 5 lines 25-31). A screw coupled with a threaded portion of the device is functionally equivalent to a bolt coupled with a nut. Since the



Art Unit: 3735

probe is not fixed relative to the ground simply by rotating the probe 90° the pressure application unit is then on the vertical. It would have been obvious to one of ordinary skill in the art at the time of the present inventor to modify the probe of Aronow et al. to include a nut and bolt style pressure application unit similar to that of Gavish in order to provide a better contact between the tissue and sensor (Gavish column 5 lines 21-25). Further more using a manually controlled method of tightening on to the body appendage there is less chance of a malfunction and an injury.

14. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Aronow et al. and Gavish as applied to claim 1 above, and further in view of Schmitt (US Patent No. 6606509 B2). Neither Aronow et al. nor Gavish teach a light source unit comprising a light emitting diode as a light source. Schmitt discloses the use of light emitting diodes as a light source (column 8 line 19). It would have been an obvious design choice to a person of ordinary skill in the art to use a light emitting diode as a light source because Applicant has not disclosed that using a light emitting diode provides an advantage, is used for a particular purpose or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected the light source of Aronow et al. and the Applicant's invention to perform equally well with either light source because both would perform the same function of providing light to the tissue to be detected by the photodetector. Therefore it would have been prima facie obvious to modify the combination of Aronow et al. and Gavish to obtain the light source as specified in claim 2 because such a modification would have been considered a mere design

Art Unit: 3735

consideration which fails to patentably distinguish over the prior art combination of Aronow et al. and Gavish.

15. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Aronow et al. and Gavish as applied to claim 1 above, and further in view of Ogawa et al. (US Patent No. 5427093). Neither Aronow et al. nor Gavish teaches a probe comprising a heat dissipating plate between the nut and the light source. Ogawa et al. teach the use of a heat-dissipating plate above the light source (figure 1 reference 9). If the heat-dissipating plate is located above the light source and the nut is attached to the light source it is inherent that the plate is between the nut and the light source. It would have been obvious to one of ordinary skill in the art at the time of the present inventor to modify the combination of Aronow et al. and Gavish to include a heat-dissipating plate similar to that of Ogawa et al. in order to prevent a low temperature burn to the patient (Ogawa et al column 1 lines 53-60).

16. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Aronow et al. and Gavish as applied to claim 19 above, and further in view of Ogawa et al. Neither Aronow et al. nor Gavish teach a heat-dissipating plate between the nut and the light source. Ogawa et al. teach the use of a heat-dissipating plate above the light source (figure 1 reference 9). If the heat-dissipating plate is located above the light source and the nut is attached to the light source it is inherent that the plate is between the nut and the light source. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the combination of Aronow et al. and Gavish to

Art Unit: 3735

include a heat-dissipating plate similar to that of Ogawa et al. in order to prevent a low temperature burn to the patient (Ogawa et al column 1 lines 53-60).

17. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Aronow et al. and Gavish as applied to claim 17 above, and further in view of Schmitt. Neither Aronow et al. nor Gavish teach a biological signal measuring system wherein the controller is a microprocessor. Schmitt teaches the use of a microprocessor as the controller for a biological measuring device. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the combination of Aronow et al. and Gavish to include the use of a microprocessor similar to that of Schmitt in order to control the timing, data acquisition and processing with a single unit (Schmitt column 8 lines 6-8).

18. Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Aronow et al. and Gavish as applied to claim 29 above, and further in view of Schmitt. Neither Aronow et al. nor Gavish teach a biological signal measuring system comprising an analog-to-digital converter. Schmitt teaches the use of an analog-to-digital converter. It would have been obvious to one of ordinary skill in the art at the time invention to modify the biological measuring device of Aronow et al. as modified by Gavish to include the use of an analog-to-digital converter similar to that of Schmitt in order to convert the data from analog format to digital to better analyze the data.

***Allowable Subject Matter***

19. Claims 7, 8 and 21 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 1st paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

20. Regarding claims 7 and 21 the prior art of record fail to teach a probe as claimed by Applicant including an elastic member between a nut and a light source.

21. Regarding claim 8 the prior art of record fail to teach a probe as claimed by Applicant including a heat dissipating plate between a nut and a light source.

22. Claim 16 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The prior art of record fail to teach the use of a break button electrically connected to the probe as claimed by Applicant.

***Response to Arguments***

23. Referring to claims 5-8 and 19-21 Applicant's arguments filed December 22, 2006 have been fully considered but they are not persuasive. Applicant argues that the nut engages a threaded portion formed on the inner wall of the body, thereby coupling the nut-bolt combination to the overall structure. The claim states the nut and bolt are coupled to one another. The specification states that when the nut and bolt are screw coupled the bolt is turned and the nut moves along the optical axis. Figure 2 shows that the nut has a bottom portion with nothing fixing the bolt to the main body of the probe. Therefore when the bolt is turned the bolt will proceed to the bottom of the nut and stop.

Art Unit: 3735

The specification does state an alternative wherein the nut and bolt are an integrated single body in which the outside of the nut is threaded and couple to a threaded portion formed on the inner wall of the body. However, this is not what the Applicant claims in claim 5 of the application. Therefore the rejection remains.

24. Applicant's arguments with respect to claims 1-6, 17-19 and 29-31 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

25. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

26. A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Art Unit: 3735

27. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zoe E. Baxter whose telephone number is 571-272-8964. The examiner can normally be reached on Monday-Friday 7:30am-4:00pm.

28. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles Marmor II can be reached on 571-272-4730. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

29. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Charles A. Marmor, II  
Supervisory Patent Examiner  
Art Unit 3735

ZEB